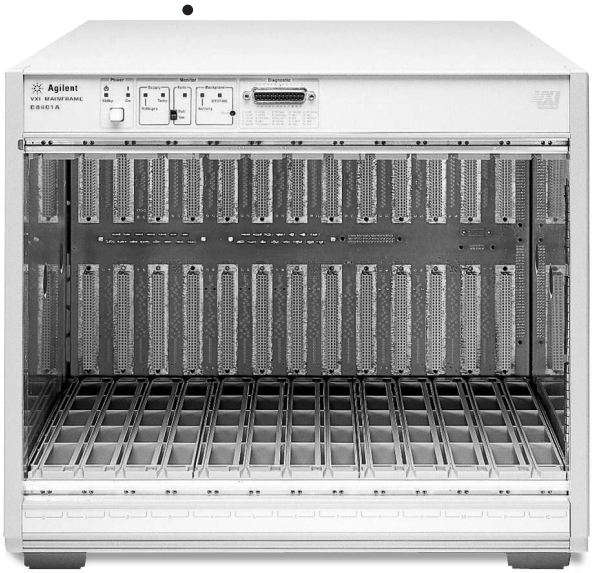
Agilent E8401A
VXI Mainframe, C-Size, 13-Slot, 500 Watt

Data Sheet

- **13-Slot, C-size**
- **Low cost for general purpose applications**
- **500 watts of usable power**
- **Efficient, quiet cooling improves VXI module performance**
- **Basic mainframe monitoring for confident measurements**
- **Compliant with VXIbus and VXI*plug&play* Specifications**



Agilent E8401A

Description

The Agilent E8401A **C-size, 13-slot VXI mainframe** is the lowest-cost mainframe in Agilent Technologies' VXI mainframe family. It delivers innovative cooling technology, improved backplane design, high reliability, easy maintenance, and versatile accessories. The power supply in the E8401A VXI mainframe provides 500 watts of usable power, sufficient for most automated test applications. The innovative air distribution system provides extremely quiet and efficient cooling. Basic mainframe monitoring of the E8401A indicates normal operating conditions at a glance. A front panel diagnostics connector allows continuous local or remote system monitoring. This mainframe also complies with the VXI Specification by providing injector surface rails used by the QUIC easy module insertion and extraction system. Superior cooling, reliable design and system monitoring make the E8401A an excellent choice for most VXI test system applications.

Refer to the Agilent Technologies Website for instrument driver availability and downloading instructions, as well as for recent product updates, if applicable.

500W Power Supply

The E8401A VXI mainframe features over 500 watts of usable power from 0 °C to 55 °C. Ample dynamic and peak currents are provided for most applications.

Superior Cooling

The innovative cooling design in the E8401A VXI mainframe provides extremely quiet and efficient cooling. Carefully engineered airflow provides the ultimate in cooling with a minimum of noise. Outstanding back pressure performance insures airflow through dense modules. Separate power supply cooling fan(s) provides an independent air path for reliable cooling of the power supply.

All fans operate in either Variable or Full Speed mode. A two-position switch on the mainframe's front panel controls the speed mode. Full Speed mode is recommended for maximum cooling and/or if acoustic noise is not a concern; all air movers (cardcage impeller and power supply fan(s)) are operated at full capacity at all times. In Variable Speed mode, the fan speed will vary depending on the temperature rise in the mainframe, and the ambient temperature. Variable Speed mode operation allows the quietest operation while providing sufficient cooling for the modules in the mainframe.

Airflow is conveniently routed into the rear and exhausted out the sides of the mainframe. This allows mainframes to be stacked or rack-mounted directly on top of one another.

At-a-Glance Confidence in Operation

The front panel indicator lights on the E8401A VXI mainframe gives immediate visual indication that the power supply voltages are operating within the VXI Specification, the temperatures are within limit, and that the fans are operational. Backplane activity and SYSFAIL indicators are also provided.

The system can be reset easily from the front panel, providing reset even when the Slot 0 is inaccessible due to cabling.

The diagnostic connector, conveniently located on the front of the mainframe, provides connection for remote monitoring of power supply voltages, power supply and reference temperatures, and fans function. This connector also allows remote on/standby, access to +5VSTDBY, ACFAIL, and SYSRESET. The connector's functionality is a superset of the functionality on the E1401B Mainframe, allowing software and hardware compatibility with existing applications. Up to 1A of +5VSTDBY may be provided by the user through the connector. Up to 1A each of + 5V and + 12V are available for external applications through the connector.

Improved, Highly Reliable Backplane Design

The backplane features solid state automatic daisy-chain jumpering for the VMEbus grant and interrupt acknowledge lines, eliminating the need for hand selection of switch settings. Full differential distribution of the CLK10 signal is provided on the backplane. This minimizes jitter and skew, providing a clean timing source for VXI instrument modules. The surface mount backplane improves both reliability and stripline signal performance.

Agilent generates SYSRESET and ACFAIL on the backplane. This is necessary for full compliance with the VXI Specification, but is not generally implemented by other manufacturers.

Easy Maintenance Rear-Accessible Power Supply and Impeller

Convenient access to both the power supply and cooling system is provided through the mainframe's rear panel; a replacement power supply or fan can be installed without removing the mainframe from a rack. The power supply's plug-in design makes repairing easy.

The impeller for module cooling is easily replaced. The internal fan for the power supply, an integral part of the supply, is easily replaced with the power supply itself. If the optional Air Filter Accessory Kit is installed, air filters may be replaced without tools.

Accessories and Configurations

Optional Rack Mounting Kits

Three rack mounting kits are available for the mainframe, providing versatile options for installation in an Agilent or a non-Agilent rack. The following rack mounting kits are available: Standard Adapter Kit, Flush Mount Adapter Kit and VXI*plug&play* Compliant Adapter Kit.

Standard Adapter Kit for Recess, Flush or Forward Rack Mounting

Using the Standard Adapter Kit (E8394A), the mainframe can be recess mounted up to 10.6 inches in ~1/2 inch increments. (Recess mounting is required for compatibility with the tinted acrylic door.) The mainframe can also be mounted extended from the front of the rack from 0 to 5.8 inches in ~1/2 inch increments, allowing mounting in racks with shallow depths. The Standard Adapter Kit includes handles and requires the E3664A Support Rail Kit or the 1494-0411 Rack Slide Kit.

Flush Mount Adapter Kit

The Flush Mount Adapter Kit (Opt. 924 or E8400-80924), the least expensive of the adapter kits, allows flush rack mounting of the mainframe. It does not include handles. The Flush Mount Adapter Kit requires the E3664A Support Rail Kit. The Flush Mount Adapter Kit is not compatible with the tinted acrylic door or with the rack slides.

VXI*plug&play* Compliant Adapter Kit

The VXI*plug&play* Compliant Adapter Kit (Opt. 925 or E8400-80925) provides rack mounting compatible with the VXI*plug&play* VPP-8 Specification for ease of interconnect with MAC Panel, Virginia Panel, TTI Testron or other VXI*plug&play*-compatible ICA receivers. The Adapter Kit locates the mainframe in the position prescribed by the VXI*plug&play* Systems Alliance and provides four mounting holes for attachment of the receiver adapter frame. The VXI*plug&play* Compliant Adapter Kit requires the E3663A Support Rail Kit or the 1494-0411 Rack Slide Kit.

Electromagnetic Compliance (EMC) Accessories

The standard mainframe is suitable for the majority of applications. However, for EMC applications, a Chassis Shield Kit, Backplane Connector Shields, and EMC Filler Panels are available.

Chassis Shield Kit

The Chassis Shield Kit (E8400-80919) is used to provide additional isolation or shielding between noisy or sensitive modules. These newly designed, patent pending chassis shields are easy to install and are grounded in all four corners.

Backplane Connector Shields

Backplane Connector Shields (Opt. 918 or E8400-80918) are useful for improving the ground connection between a module and the backplane. For a few modules, they are necessary for EMC compliance to EN55011 and CISPR11. For the vast majority of modules, they are not necessary. Note that these shields are *only* useful *if* the module includes contacts conforming to VXI Spec B.7.2.3.

EMC Filler Panels

EMC Filler Panels (E8400-60202) are used to provide a continuous connection across the front opening of the mainframe. All Agilent modules include EMC contacts to the adjacent slot. Using EMC Filler Panels in the empty slots completes the connection and reduces radiated emissions and increases radiated and ESD immunity.

Optional Air Filter

Air filters are not necessary on these mainframes. However, an optional Air Filter Kit (E8395A) is available for use in demanding environments. The airflow is reduced less than 10% with a clean air filter installed.

Cable Routing

In rack-mount installations, cables can be routed to the front of the mainframe or from below the mainframe.

The optional Cable Tray (E8393A) allows cable routing under the mainframe. The Cable Tray may be mounted to provide three different heights: one EIA rack unit (44.5mm), two EIA rack units, and halfway between one and two EIA rack units. It is compatible with the E3664A Support Rail Kit and the 1494-0411 Rack Slide Kit. If the mainframe is used on a benchtop, the mainframe feet may be removed and reinstalled on the bottom of the Cable Tray.

Optional Door

An optional Tinted Acrylic Door (Opt. 915 or E8400-80915) is available for use in rack-mount installations. All of the modules installed in the mainframe are accessible when this door is open. The door hinges on the right so that its latch mechanism occupies the space outside Slot 0, allowing the door to close with the minimum recess into the rack. Its hinges are a lift-off type so that the door may be easily removed when open. It is fabricated of acrylic to provide adequate strength and superior scratch resistance when compared to polycarbonate.

The Tinted Acrylic Door Kit requires and is compatible with the Standard Adapter Kit (E8394A) only.

Documentation

The mainframe documentation consists of a User and Service Manual. The manual is distributed on the Agilent Universal Instrument Drivers CD-ROM supplied with the mainframe and a variety of other Agilent VXI products. It is also available on the Agilent Technologies Website. This documentation describes all mechanical aspects for the mainframe and its accessories. A printed copy of this manual is also included.

Warranty

Agilent Technologies provides a standard 3-year return-to-Agilent warranty on this mainframe. Opt. W01 converts the standard warranty to 1-year on-site.

Product Specifications

Mechanical

Mainframe height:	352 mm (13.9 inches) (8 EIA rack units)
Mainframe width:	424.5 mm (16.7 inches)
Mainframe depth:	631 mm (24.9 inches)
Mainframe weight:	19 kg (42 lbs.)

Available Current

Voltage	Peak Current I_{MP} (Amps) @ 55 °C:	Dynamic Current I_{MD} (Amps) @ 55 °C:
+5 V:	50 A	5 A
+12 V:	6 A	1 A
–12 V:	4 A	1 A
+24 V:	4 A	1 A
–24 V:	4 A	1 A
–5.2 V:	20 A	2 A
–2 V:	10 A	1 A

Power

Temperature range:	0-55 °C
Available power (90-264 Vac):	686 W
Usable power (90-264 Vac):	500 W

Power Input

Input voltage:	90-264 Vac (single continuous range)
Input frequency:	47-66 Hz (across full input voltage range)
Inrush current:	
At input voltage 100 Vac:	25 A typ.
At input voltage 264 Vac:	55 A typ.

Power Switch

On/Standby switch on front with lighted indicator.

+5VSTDBY

(Power may be provided by the user to the +5VSTDBY bus on the VXI backplane.)

Current:	1 A max
Voltage range:	5.25 V max., 4.875 V min.
Connector:	Pins 8 and 21 of the diagnostic connector

Power Supply Protection

All voltages are protected from over-temperature, over-voltage, over-current, short-to-ground and short-to-other-output. Protection mode is full shutdown. Recovery occurs when the fault condition is removed and power on/standby is cycled.

Acoustic Noise

(Sound power at bystander position one meter in front of mainframe)

High-speed fan:	55 dBA
Variable fan on low speed:	42 dBA

Shielding

Front panel EMC gasketing:	Front panel gasketing provided per VXI Rev. 1.4, B.7.2.3
Backplane shielding:	Backplane connector shields per VXI Rev. 1.4, B.7.2.3
Intermodule chassis shielding:	Intermodule chassis shields per VXI Rev. 1.4, B.7.3.4

Airflow

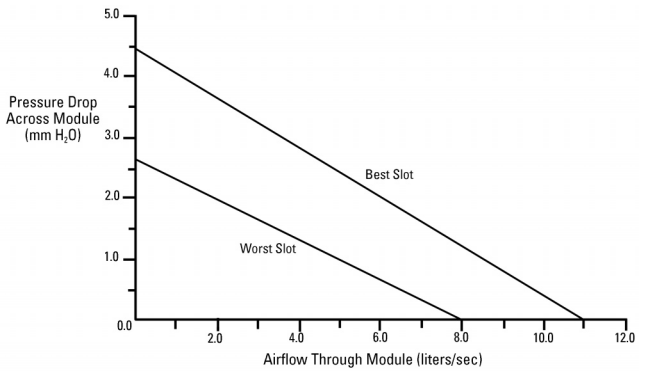
Airflow is routed into the rear and exhausted out the upper sides of the mainframe. Allow 50 mm of clearance for proper air flow.

Fan Speed

(Cooling Mode, High or Variable, switchable on the front panel. Controls both module impeller and power supply fan.)

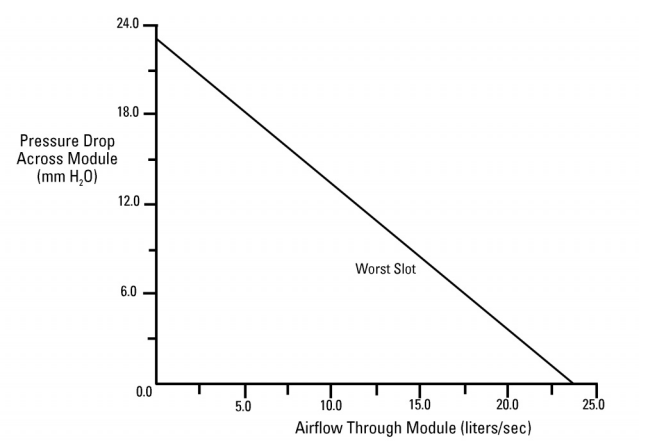
High fan speed mode:	Full airflow all the time
Variable fan speed mode:	Fan speed increments through 8 discreet speeds as a function of ambient, module, and power supply temperatures.

E8401A/03A/04A Cooling Specification Charts



VXI-8 Specification Draft 2.0. Fixture revision 1.7.

- VXI-8 Standard Modules installed in all other slots.
- Performance shown for Worst Slot (slot 1) and Best Slot (slot 10).
- Front-to-Rear Variance 13% worst case. Typically 10%-12% in most slots.
- Fans on Full Speed. Minimum airflow is approximately 50% with fans on Variable Speed.
- Air Filter Kit not installed. Airflow is reduced approximately 10% with clean air filters installed.
- Measurements taken at 1,500 m altitude.



All other slots blocked. Airflow decreases as additional slots are opened.

- Performance shown for Worst Slot (slot 2). Airflow is greater in all other slots.
- Fans on Full Speed. Minimum airflow is approximately 50% with fans on Variable Speed.
- Air Filter Kit not installed. Airflow is reduced approximately 10% with clean air filters installed.
- Measurements taken at 1,500 m altitude.

Backplane Specifications

- Solid-state automatic daisy-chain jumpering for BUS GRANT and IACK signals.
- Full differential distribution of CLK10.
- ACFAIL* and SYSRESET* in full compliance with the VMEbus and VXIbus Specifications.
- Surface mount construction and no sockets for maximum reliability.

Basic Monitor Specifications

Indicators:	• Power-on or Standby status • Power supply output voltages monitor • Power supply temperature monitor • Fans status monitor • Backplane activity monitor • Backplane SYSFAIL monitor
Switches:	• On/Standby • Fan Mode: Switches all fans between Full Speed and Variable Speed modes • Reset: Asserts backplane signals SYSRESET and ACFAIL
Diagnostic connector:	• Output all 7 backplane voltages for monitoring • Output +5V and +12V for remote applications. 1A max each • Input +5VSTDBY to backplane. 1A max total for pins 5 and 18 • Remotely operate On/Standby • Power supply temperature output • Reference temperature output • Fans OK output, same as Fans indicator • Backplane voltages OK output • SYSRESET*, input or output • ACFAIL*, output • Ground

Environmental

Temperature

Operating temperature range:	0 °C - +55 °C
Storage temperature range:	–40 °C - +75 °C

Humidity

Operating humidity range:	Up to 95% RH from 0 °C to +40 °C, Up to 65% RH from +40 °C to +55 °C
Storage humidity range:	Up to 95% RH from 0 °C to +55 °C, Up to 65% RH from +55 °C to +75 °C

Altitude: Up to 3000 m

Standards Compliance

100% compatible with the VXIbus Specification Revision 1.4.

Repair

(Diagnosis and troubleshooting through the front panel monitor and connector.)
MTTR = Mean Time to Repair

MTTR, power supply:	<10 min. (w/mainframe and modules fully installed in rack)
MTTR, impeller and/or fan:	<10 min. (w/mainframe and modules fully installed in rack)

General Specifications

VXI Characteristics

VXI device type:	Mainframe
Data transfer bus:	All per VXIbus Specification, Rev 1.4
Size:	C
Slots:	13 available
Connectors:	P1/P2
Shared memory:	n/a
VXI busses:	All per VXIbus Specification, Rev 1.4

Ordering Information

Description	Product No.
13-Slot, C-Size VXI Mainframe, medium performance, with 500 W power supply and Basic Monitoring	E8401A
Module Installation Using Standard Settings	E8401A 500
Tinted Acrylic Door Kit	E8401A 915
Installed Backplane Connector Shields	E8401A 918
Flush Rack Mount Kit	E8401A 924
VXI*plug&play* (VPP-8) Compatible Rack Mount Kit	E8401A 925
Convert 3 yr. Return-to-Agilent to 1 yr. OnSite Warr.	E8401A W01
Extra User and Service Manual	E8401-90000
Cable Tray Kit	E8393A
Tinted Acrylic Door Kit	E8400-80915
Backplane Connector Shields Kit	E8400-80918
Intermodule Chassis Shield Kit	E8400-80919
EMC Filler Panel (1-slot)	E8400-60202
VXI Slot Filler Panels:	
1-Slot:	E8400-44305
3-Slot:	E8400-44306
Standard Rack Mount Adapter Kit	E8394A
Flush Rack Mount Kit	E8400-80924
VXI*plug&play* (VPP-8) Compatible Rack Mount Kit for Agilent Racks	E8400-80925
Air Filter Accessory Kit	E8395A
Support Rail for Standard Rack Mount Adapter or Flush Rack Mount Kit	E3664A
Support Rail Kit for VXI*plug&play* (VPP-8) Rack Mount Kit (used w/E8397A)	E3663A
Rack Slide Kit for Standard Adapter Kit or VXI*plug&play* (VPP-8) Compatible Rack Mount Kit	1494-0411
Replacement 500 W Power Supply for E8401A (Remfrd)	E8401-69276

Related Literature

2000 Test System and VXI Catalog CD-ROM,
Agilent Pub. No. 5980-0308E (detailed specifications for VXI products)

2000 Test System and VXI Catalog,
Agilent Pub. No. 5980-0307E (overview of VXI products)

1998 Test System and VXI Products Data Book,
Agilent Pub. No. 5966-2812E

Online

Internet access for Agilent product information, services and support
www.agilent.com/find/tmdir

VXI product information
www.agilent.com/find/vxi

Defense Electronics Applications
www.agilent.com/find/defense_ATE

Agilent Technologies VXI Channel Partners
www.agilent.com/find/vxichanpart

Agilent Technologies' HP VEE Application Website
www.agilent.com/find/vee

Agilent Technologies Data Acquisition and Control Website
www.agilent.com/find/data_acq

Agilent Technologies Instrument Driver Downloads
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Printed in the U.S.A. 04/2000
Publication No.: 5966-2919E

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